

Case report: Spinal epidural abscess from *Klebsiella pneumoniae*

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Abstract

*We report a rare case of cervical spinal epidural abscess due to *Klebsiella pneumoniae*. While the most likely pathogen is *Staphylococcus aureus*, 2.5% of CNS infections have been attributed to *Klebsiella pneumoniae*.¹ The source of infection in this case is suspected to be from cervical vertebra osteomyelitis/discitis that expanded to epidural space. Prompt drainage of the abscess by decompression with debridement is the key of management that is shown to decrease morbidity and mortality in epidural abscess patients.*

Case presentation

A 42 year old Filipino man presented in October 2004 with neck pain of one month duration. The pain started in September, one day after he returned from the Philippines. His severe neck pain radiated down to both shoulders, particularly the left. It was also associated with neck stiffness and left arm weakness. He denied any fever, chills, bowel or bladder incontinence, urinary symptoms, recent illnesses, trauma, or soft tissue infections. His neck pain was initially treated with Celecoxib without relief.

On review of symptoms, he had diarrhea during his trip in the Philippines which subsequently resolved after treatment with Ciprofloxacin for 7 days.

The patient has a history of Diabetes type 2 which was adequately controlled with Pioglitazone. He underwent appendectomy and hernia repair in the distant past. He denied a history of tuberculosis exposure, recent sick contacts, or history of IV drug use.

Physical examination revealed a temperature of 98.6 F, pulse 60 beats per minute, respiratory rate 20/min, blood pressure 135/86 mmHg, and Oxygen saturation was 97% on room air. He was comfortable at rest. He had limited passive range of motion of the head and neck area due to pain. There was significant point tenderness on palpation of the mid cervical through mid thoracic spinous processes. His oral pharynx was moist and pink, and he had good dentition. There was no cervical lymphadenopathy. Heart, lung, and abdominal examinations were unremarkable. There were no skin manifestations of endocarditis. There was no costovertebral angle tenderness to percussion. Motor examination revealed mild bilateral upper extremities

weakness (deltoid strength of 4+/5 bilaterally, and normal strength 5/5 on the lower extremities).

Laboratory examination revealed a white blood cell count of 12,300 with 70% neutrophils, 16% bands, 19% lymphocytes, hemoglobin of 15.5, and a platelets count of 242,000. ESR was 43. Serum electrolytes, blood urea nitrogen, and electrolytes were within normal range. Blood glucose was 157. His AST was 924, ALT was 546, GGT was 779, alkaline phosphatase was 140, bilirubin was normal. Hepatitis A IgM, hepatitis B surface antigen, hepatitis B core antibody, hepatitis C antibody were all nonreactive. Lumbar puncture revealed a normal opening pressure. There were no CSF white blood cells, CSF protein was 114, CSF glucose was 82, and CSF gram stain revealed 1+ wbc and no organisms, CSF culture negative. Chest x-ray was normal. Urinalysis revealed no white cells, negative leukocyte esterase and nitrites. Urine culture revealed no growth. His CT scan of the head was normal. CT scan of the abdomen with oral and intravenous contrast showed diffuse fatty infiltration of the liver, small cyst in the upper pole of right kidney and stones in the dependent portion of the gallbladder. MRI scans of the brain and cervical spine showed C4 and C5 epidural abscess with cord compression, osteomyelitis and diskitis with anterior edema. Two sets of blood culture obtained prior to antibiotics revealed no growth.

Hospital course

He was treated initially with intravenous Ceftriaxone and Vancomycin. On day 3, he had surgical evacuation of the epidural abscess with C4-5 Corpectomy and fusion with iliac crest bone graft. The abscess was cultured during the surgery.² Final culture of the abscess revealed *Klebsiella pneumoniae*, and the patient was treated successfully with an eight week course of Ceftriaxone monotherapy. His neck pain subsided. Repeat MRI scan of his cervical spine after eight weeks of antibiotic therapy revealed complete resolution of his infection. Follow up four weeks after discontinuation of therapy showed the patient to be well and without clinical evidence of recurrent infection.

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Discussion

This case presents several unusual features of spinal epidural abscesses. While the most common cause of spinal epidural abscess is *Staphylococcus aureus*, in this patient the cause was from *Klebsiella pneumoniae*. Spinal epidural abscesses due to gram negative bacilli are found in 16%. *Streptococci* found in 9%, *Staphylococcus epidermidis* in 3%, and anaerobes in 2%.

Most cases of spinal epidural abscess are located in the lumbar area, this case occurred in the cervical spine.

The source of spinal epidural abscesses could only be found in 30% of cases.³ Hematogenous spread, adjacent soft tissue infection and direct inoculation from trauma or surgery are the three major routes of infection to the vertebra.⁴ Our patient had both spinal epidural abscess and vertebral osteomyelitis. His infection probably began in the disc and spread to his vertebrae and epidural space, consistent with prior reports that epidural abscesses usually begin in the vertebral disc or junction between the vertebral body and disc.^{5,6} Since our patient did not have a history of surgery, trauma, or signs of soft tissue infection in the cervical spine area, the most likely route of spread was hematogenous. His bout of diarrhea in the Philippines may have been the original source. In adults, highly vascular bone marrow may predispose to bacterial seeding.⁶ Blood cultures have a yield of only 62% whereas cultures from the spinal abscess have a yield of over 90%.⁷

The fact that our patient had diabetes mellitus puts him at significant risk for spinal epidural abscess. In an analysis of 24 patients, diabetes mellitus is a significant predisposing factor for spinal epidural abscesses.⁸ Diabetics have an impaired immune system

and are particularly prone to infections caused by *Staphylococcus*, *Klebsiella*, and *Streptococcus pneumoniae*.⁹ Diabetics can have transient episodes of bacteremia from the gallbladder without overt cholecystitis. Our patient had elevated liver enzymes and gallstones evident on abdominal CT scan. While there were no signs of acute cholecystitis, that may still be a potential source of his spinal epidural abscess. *Klebsiella* is commonly found in the biliary tract.¹⁰ Kuramochi, G, et al reported a case of *Klebsiella pneumoniae* spinal epidural abscess associated with gastrointestinal infection from liver abscess.¹¹

References

1. Jones, M.E., et al., Prevalence of antimicrobial resistance in bacteria isolated from central nervous system specimens as reported by U.S. hospital laboratories from 2000 to 2002. *Ann Clin Microbiol Antimicrob*. 2004; 3(1): p. 3.
2. Community-associated methicillin-resistant *Staphylococcus aureus* infections in Pacific Islanders--Hawaii, 2001-2003. *MMWR Morb Mortal Wkly Rep*. 2004; 53(33): p. 767-70.
3. Epidural abscess. up to date: p. Table 1/ Sources of Infection for Spinal Epidural Abscess.
4. McHenry, M.C., et al., Vertebral osteomyelitis and aortic lesions: case report and review. *Rev Infect Dis*. 1991; 13(6): p. 1184-94.
5. Kapeller, P., et al., Pyogenic infectious spondylitis: clinical, laboratory and MRI features. *Eur Neurol*. 1997; 38(2): p. 94-8.
6. Torda, A.J., T. Gottlieb, and R. Bradbury, Pyogenic vertebral osteomyelitis: analysis of 20 cases and review. *Clin Infect Dis*. 1995; 20(2): p. 320-8.
7. Gellin BG, W.K., Gamache FW Jr, et al., Epidural abscess. in *Infections of the Central nervous system*. 1997. Lippincott-Raven. p. 507.
8. Pereira, C.E. and J.C. Lynch. Spinal epidural abscess: an analysis of 24 cases. *Surg Neurol*. 2005; 63(Suppl 1): p. S26-9.
9. Diabetes Mellitus type 1 in adults--outcome. First consult. p. acute complication. November 26, 2004. Available at <http://80-www.firstconsult.com.prx.html.org/?type=med&id=01014722>. Accessed February 15, 2005.
10. Gerald L Mandell, e.a., *Tribe Klebsiellaeae*, in *Principles and Practice of Infectious diseases*. Churchill Livingstone. p. 2305.
11. Kuramochi, G., et al., *Klebsiella pneumoniae* liver abscess associated with septic epidural abscess. *Hepatol Res*. 2005; 31(1): p. 48-52.

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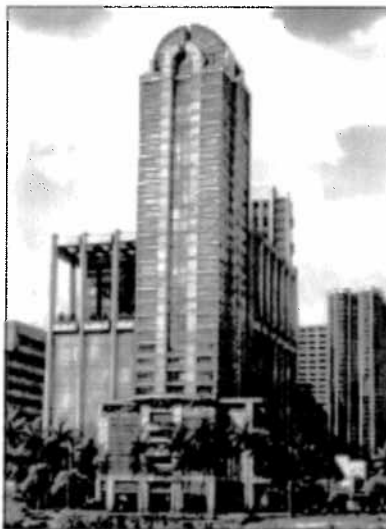
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